Beryllium Health and Safety Committee

Steve Abeln, Committee Chairman
Ablen@lanl.gov 505.667.3954

Meeting Minutes
October 17-18, 2001
Livermore, California (LLNL)

A meeting of the Beryllium Health and Safety Committee was held in Livermore, California at Lawrence Livermore National Laboratory (LLNL). The meeting agenda is appended as Attachment A. A list of attendees is appended as Attachment B. A list of discussion topics and associated notes is given below.

Wednesday October 17, 2001

1. **8:45 –9:00 a.m., Overview of previous meeting's minutes (J. McKenney).**

   The Committee reviewed previous meeting (May 1 – 3, 2001) minutes.

2. **9:00 – 9:45 a.m. LLNL Medical Surveillance (S. Busero)**

   Overview:

   - Brief update on Medical Surveillance Program at LLNL – current workers
   - Update on Former workers screening program
   - Research Needs
   - Future directions

   7/300 confirmed sensitized, 5 machinists (1 with RF exposure), 1 chemical tech (grinding Be in lab), 1 mechanical tech (laser target chamber cleanup. Active participation from MMED (NC shop). Pulmonary evaluations yielded no confirmed CBD cases (0/5).

   LLNL current worker Surveillance Programs:

   - Estimated BeW's ~100
   - Estimated BAW's 300+ (former exposure) – Worker identification via surveys, ESH teams
   - Estimated surveillance exams to be completed FY '01 ~300

     LPT Participation rate has improved above earlier 50% rate due to sensitization patterns

   Implementation Issues – CBDPP

   - Surveillance exams are underway, pilot registry submission is done
   - DOE consent form not well received (but is unchangeable)
   - Enhanced identification and worker outreach in NC shop, maintenance workers and Site 300 via ES&H Teams

The Be Task Force can help us with worker/manager education and outreach

Update – LLNL Former Worker Program

- 1300/094 (14.3%) offered want LPT screening
- 24/760 (3.2%) confirmed sensitized (CBD work-upsi in progress @ UCSF)
  - Machining and hand tool repair
  - Handling and inspecting Be parts
  - Site 300 (firing tables, HE truck drivers)

What is the exposure potential of test site workers?

How will CBD develop in a "Lower Exposure" Environment?

- Initial group of RF sensitized workers showed high rates of coexisting CBD (Newman, 1998)
- Later reports (Stenge, 2001) show sensitization and CBD at RF have decreased (exposure controls?)
- Half the DOE CBD group is "clinically silent"
- Key intervention for this group is medical removal (not drugs)
- LLNL's(and LANL's) data: only 0-30% of sensitized workers have concurrent CBD (not 70-100%)

Lower exposures, earlier detection, and prompt medical removal should make CBD a less severe illness

Further Research Emphasis

- Be sensitization in "peripheral" workers
  - Background susceptibility?
  - Incidental contamination? Skin exposure?
- Role of Be body (lung) burden in CBD disease progression, pathophysiology
- LPT standardization? BAL samples
- Noninvasive techniques for diagnosis of sensitized workers (HRCT, etc.)
- New treatments (chelation, etc.)

References:

- Daniloff, et. Al. *Am J. Respir Crit Care Med,* 1997
- Arris J, Bartelson BB, Barker E, Balkissoon R, Kreiss K, Newman LS. Serum neopterin in chronic beryllium disease. *Am J indus Dis* 1997; 32:21-26
- Kreiss K, Newman LS, Mroz MM, Cambell PA. Screening blood test identifies subclinical beryllium disease. *J Ocuup Med* 1989; 31:3603-608
- Neman, L. Progress in Detection, Diagnosis, and Treatment of CBD. Presentation 3/2001, CBDPP Implementation Workshop.
- Strange AW (personal communication). EG&G Rocky Flats. Rocky Flats Environmental Technology Site, Golden Colorado.

There was discussion amongst the committee regarding some preliminary discussions originating from D. Deubner regarding environmental background measurements, and false positives (sensitization) generated by the environmental background.

3. **9:30 – 10:00 a.m., Beryllium Chemistry, (Mark Sutton):**

"Beryllium Chemistry – A Pilot Study of Modeling Techniques Applied to Chelator Design"

Presentation Overview

- Be Chemistry
- Approaches to Chelation
- LLNL Research and Scientific Capabilities
- Research Goals ad Deliverables

Be –group II element, behaves more like aluminum than alkaline earth metal due to small size, high electronegativity and ability to make 4 covalent bonds in the excited state. Amphoteric reactions, allowing anionic and cationic hydrolyzed species.

Chelators are an ideal way to move metal ions from one place to another

- Chelos is the Greek work for crab
- Chelators are molecules which have two or more functional groups that bind with metal ions to form a ring structure

Chelators can be engineered to optimize their efficiency

- Salicylates
- Catechols
- Hydroxyquinolines

Chemical Thermodynamics:

- Complex Charge
- Stochiometry
- Speciation
- The equilibrium constant shows the stability of the metal/chelate complex as a function of pH, Hh, and competing ions

Preliminary thermodynamic results:

- Modeling studies using thermodynamic equilibrium speciation codes show the metal-chelate interaction in a variety of systems
- Dissolution of Be particles in body fluid and subsequent transport is predominated by BeOH- soluble species

Be Chelation with Salicylic Acid in Elemental Interstitial Fluid

- Salycylic acid shows strong chelating properties with Be in elemental interstitial fluid matrix thermodynamic model

Be Chelation with Tiron in Elemental Interstitial Fluid

- Tiron shows strong chelating properties with Be in elemental interstitial fluid matrix thermodynamic model

Combinatorial Chemistry

Structural Analysis

- Extended X-ray absorption Fine Structure can show the structure of the metal/chelate complex

Quantum Molecular Modeling

- Large-scale quantum modeling can be used to predict the stability of the metal-chelate complex and compare with thermodynamic investigations

Secondary Ion Mass-Spec Imaging

Preliminary Research Goals:

- Proof of concept of scientifically rational method for determining selective chelators, using Be as an example
- Preliminary evaluation of the most promising chelators

Acknowledgements:

Stephen Burastero, Chris Mundy, Judy Quong, Christine Hartmann-Siantar, Julie Perkins

4. 10:10 – 10:40, Colorimetrc Sampling Method (Tammy Taylor, LANL):

"Beryllium Colorimetric Detection for Real Time Monitoring of Laboratory Environments"

Acknowledgements:

- Funding
- Director's Postdoctoral Fellowship
- Off Site Source Recovery Program,
- LANL Environmental Division
- DARHT
- Gary Whitney - ESH-5
- Kimbrly Ellis and Katherine Creek,
  LANL Beryllium Facility

Background:

- Beryllium (Be) has exceptional material properties (3 times lighter than Al, 6 times stiffer than steel)
- Used extensively in the aerospace, computer, electronics and nuclear industries
- Be is also a toxic metal that poses extreme risks to human health
- Triggers an cell-mediated immunoresponse in 1-6% of exposed individuals – Chronic Be Disease (CBD) Class A Carcinogen

Complete information is available from T. Taylor's presentation on the BHSC web site (www.sandia.gov/BHSC)

5. 11:00 – 11:30 a.m., Paper Review (M. McCawley, NIOSH mam2@cdc.gov)

"Aerosols Generated During Beryllium Machining" - J. W. Martyny, Ph.D., Mark D. Hoover, Ph.D., Margaret M. Mroz, Ph.D., Kimberly Ellis, M.S., Lisa A. Maier, MD, Karen L. Sheff, MS, Lee S. Newman, MD

The paper was written based on tests done at the Speedring facility dealt with respirable size particles, comparison between area type samples and personal samples. The general conclusion between area samples and personal samples is that personal samples typically will measure higher values than the area samples (with exceptions).

Conclusions: The conclusions of the authors were that the particulate size is one of the dominant factors for sensitization. There are limitations with coming up with comparisons with other work because count size distributions were not examined within the scope of this study. There is no chemical form distinction (i.e. between Be metal and Be compounds).

The paper reviewed by M. McCawley is posted from an information standpoint only. It is not necessarily a collective consensus document by the BHSC. Any questions regarding the material should be directed to the authors of the paper or M. McCawley.

6. 1:00 p.m. – 1:30, Recycled Metals Industry (C. Hai Teh, Noranda, Micro Metallics Corp, John Bullock, Attorney)

The reclamation and metal recycling industry was represented before the committee to inform the committee of the "grave yard" for the beryllium industry. The scrap industry is interested in gold, palladium, and silver reclamation. The Noranda contingent let the committee know of the process for reclamation. In addition, the committee was briefed on recent statistics regarding a recent CBD case. There are 5 scrap facilities that Noranda utilizes. The committee was briefed as to the control programs and the thresholds that the scrap industry has deployed. The industry is very interested in the colorometric process that Tammy Taylor presented earlier in the day. The committee was briefed on the need for existing technology, as private industry does not have the research capabilities that the DOE Complex has. 33 out of 2,603 workers have tested positive for sensitization, and 16 have been diagnosed with CBD.

7. 1:30 – 2:30 p.m., Paper Discussion (Paul Wambach, DOE/EH)

Paper Presentation: "*Beryllium Exposure Limits*"

Paul fielded questions regarding the Beryllium Exposure Limits paper and the rationale for the calculations that were determined in this paper.

Paul demonstrated seven different Be exposure limits that are in current publication.

TLV-STEL Compliance

- Paul pointed out the specifics of the Compliance Parameters
    - 95% probability of compliance with 2 micro grams per cubic meter TLV-TWA results in 35% probability of compliance with the 10 microgram/cubic meter TLV-STEL
    - 95% compliance with an 8 hr TWA level of 10/32 of approx. 0.3 microgram/cubic meter assures compliance with TLV-STL

Long Term Mean Compliance

- 95^{th} percentile < 4x mean in any distribution
- Mean < 95^{th} percentile/2.5 when the Geometric Standard Deviation (GSD) is between 2 and 14.

  The mean is a lagging indicator, so several samples have to be taken before any confidence can be established in the mean.

The relationship between the mean of exposure distribution and the GSD of 8-hour exposures is fairly stable. We feel that we can rely on high level of compliance of the 8-hour limit to control the mean exposures.

Paul posed the question: What is the exposure distribution amongst beryllium workers? Paul is publishing a paper on this. Paul briefed the committee on the exposure distribution for Rocky Flats Beryllium Machining in October of 1986. He also briefed the committee on the analysis of variance. Other data sets GSD's:

- Cardiff: 1.9 – 4.6
- Speedring: 6.1
- Elmore: 3.8
- Rocky Flats: 2.9

Skewed Distribution:

- Mean level highly affected by a few high levels
- Single outlier raises mean by 33%
- When GSSD – 3.2, 95 % confidence interval around the mean is large

Conclusions:

- Investigations of dose rate vs. total dose will be confounded by the large influence excursions have on mean exposure level
- Investigations of the influence of particle size on risk will be confounded by the uncertainty in determining mean levels
- Risk is driven by infrequent exposure excursions that are difficult to predict or detect without frequent monitoring.

For Specifics on this paper, please contact Paul Wambach directly:

(Paul.Wambach@eh.doe.gov)

8. Technical Discussion: Be – Genetics Testing at NIOSH (Ainsley Weston, NIOSH)

Goals:

- ID genes associated with BD
- Genes: Effect modifiers (impacts exposure standard
- Better Understanding of immunopathology
- Strategies for Prevention

RFLP for E69

- Manuscript on "test predictive value is under review
- E69 update on Be worker samples
- Allele-specific sequencing

HLA-DP Locus

- Located on chromosome 6, 263 nuclear tides long
- Not a simple proposition

Genetic Factors:
- Oligonucleotide hybridization
- Association with HLAD PB1

Ainsley Weston briefed the committee on the sequencing of the genes at specific locations. In addition, he briefed the committee on case-control study updates

E69: Value as a Genetic Test:

- Fraction of the population with the Marker that will go on to get the disease
- Depends on:

    - Prevalence of disease
    - Prevalence of marker
    - Strength of marker association with disease

A. Weston presented the data regarding the strength of association. The apparent prevalence of disease 33/77 = 43% vs. the hypothetical strength of the disease where the apparent prevalence of disease = 5%. The predictive value is the numbers of people with the marker that go on to get the disease. New data was presented; the marker varies by ethnicity. Caucasians, African Americans, Hispanics, and Chinese were examined. The Carrier Frequency of these groups is 33, 40, 47, and 59 respectively.

Questions or comments regarding this topic should be directed directly to Ainsley Weston.

9. Technical Discussion: Skin Exposure (Sally Tinkle, NIOSH)

K. Creek – We hope to get a position paper from the committee out of these discussion. In addition, we hope to determine how should we be assessing our workplace in addition to pursuing compliance.

Sally wanted to give a basic understanding of the skin organ. She demonstrated the mechanisms that the skin utilizes to form an "impervious barrier" to protect the body. Point of fact is that the skin is not exactly impervious to particulate. The skin varies in thickness as the depth is profiled through the skin. This is important with regard to the skin's ability to hold out particulate sizes. The skin was profiled in some of these tests using "tape stripping". This method is utilized to peel off a layer of skin so that the skin can be profiled through its strata to determine the penetration depth of particulate.

It is currently being investigated if skin sensitization could lead to CBD through the hair follicles into the blood stream and transported to the lungs. Sally's brief introduction on how skin sensitization could occur and preface CBD generated the following discussion:

<u>Should we formally pursue skin protection against beryllium?</u> Preliminary data from BWI (M. Kolanz) shows a decrease in sensitization amongst new hires. BWI work culture appears to have adopted long sleeve shirts and gloves. When handling solid beryllium, there is not a defined requirement, but where the potential exists for particulate, gloves are being adopted. Tuscon is in gloves. Sally's opinion on whether gloves should be worn is that when the valleys and ridges of the skin are examined under SEM imaging, it appears that gloves are reasonable. However, she was very clear that beryllium particulate has not been shown to cause sensitization. Some preliminary data suggests the path could exist, but it has not been proven. There was some discussion regarding whether wearing latex gloves and the resulting increase in perspiration could increase the dissolution rate and actually increase the chances for sensitization if it is a legitimate route of exposure. Sally reminded the committee that there are several arguments for not using gloves but utilizing hand washing decontamination and lotions to enhance the skins ability to self protect. There was much discussion regarding the use of cotton gloves, and the behaviors that are associated with hand to upper respiratory interaction (scratching nose, hair, etc.). Tony Quinn commented that AWE felt that it was necessary to protect the beryllium product from human contamination. He asked if it was coincidence that the rate of sensitization is much lower.

10. Technical Discussion: Air Sampling (M. McCawley, NIOSH)

M. McCawley presented data that suggests that particle size is more relevant to exposure than mass. Several options were presented for air sampling and monitoring. This presentation will be posted on the web.

11. 4:30 – 5:00 p.m. Cleaning Processes for Beryllium Parts and Other Contaminated Items (Jim Johnson, LLNL)

Background Information:

- Currently, no agreed procedures describing cleaning processes for beryllium parts and other contaminated items exist
- Beryllium parts and potentially contaminated items are routinely moved on-site and off-site.
- Surface contamination is an important component of our Beryllium Control Program.
- Surface swipe methods are not standardized between organizations.
- Be Surface Swipe swipe values
  - Be work area: </= 3 microgram/100 sq. cm
  - Free release value </= 0.2 microgram/100 sq. cm
- BeO parts may need a separate procedure
- A standardized cleaning process for beryllium parts with a documented cleaning efficiency can establish a Be part as an article, without sampling each part
- The process can also be applied to Be contaminated cutting tools and other items., following a similar evaluation process

An agreed upon process would minimize concern: A documented and agreed upon cleaning process would minimize concern when accepting beryllium parts from other DOE contractors. LLNL is Currently Evaluating an Ultra Sonic Cleaning Process

- Unit under evaluation
  - Colster 3 unit with Rinse
  - Model E 386
  - Purchased from ESMA, INC., South Holland, IL 60473
- Unit contains 2 ultra sonic tanks and a hot air drying tank
- Chemical solution
  - Jem Chemical G # 68 XLF
  - Commercial cleaning agent which has been used on metal mirror surfaces
- Initial evaluation
  - 9 Be pieces: 6”x2”x0.25”
  - Swipe half of the surface before cleaning plus half after cleaning
  - Carry out additional measurements on flat pieces
- Continue work using various parts

Future Direction for Project

- Complete our evaluation and utilize in LLNL Beryllium Control Program
- ID other DOE contractors with existing cleaning processes and compare the process and their cleaning efficiency
- Establish a working group of DOE contractor representatives who will evaluate their cleaning process data
- If possible, a cleaning process will be developed which will reduce surface contamination below the free release value

A discussion ensued on this topic, and consensus was reached

Thursday October 18, 2001

1. **8:30 –9:30 a.m., Update on Be Registry/AIHA Be Proficiency Testing (D. Weitzman, DOE/EH)**

   David Weitzman updated the committee on the beryllium registry and the AIHA Beryllium Proficiency tests at Y-12. The presentation is posted on the web (www.sandia.gov/BHSC).

   A discussion on the subject of human studies regulatory requirements ensued on the difference between medical surveillance and research. It is thought that because the information does not contain personal identifiers, that it is exempt from the regulatory requirements. However, there is consensus that there should be a formal request for an exemption in writing from the site Internal Review Board (IRB) regarding using the data from the registry and reconciling it with human studies regulatory requirements.

   For information regarding this topic, please contact D. Weitzman directly regarding the Beryllium Registry.

2. **9:00 – 9:45 a.m. Beryllium Surfaces (Jim Johnson, LLNL)**

   Wet vs. Dry?

   To Change or Not to Change:

   - Dry vs. Wet
   - LLNL has a history of using dry wipes
   - This also parallels our Rad. Surface evaluation process which is required by 10 CFR 835
   - A Surface Swipe is a Qualitative Evaluation Technique

     Evaluation of Dry vs. Wet:

     - Designed a field experiment to evaluate the differences in the two techniques
       - Swipe material
       - Whatman 50 swipe tab (dry, distilled in water)
       - Ghost wipe – (web, air dried)
     - Swipe condition:
       - Dry 100 sq. cm

- Wet 100 sq. cm (same location
- Wet 100 sq. cm (side-by-side)

- Material Swiped
  - Different beryllium work area locations
  - Various weapons parts
  - Beryllium sheet – aged

Jim presented the data on these swipes for review to the committee. Questions regarding this data should be directed to Jim Johnson at LLNL

Conclusions:

- Surface swipes don't quantitatively remove all surface contamination
- No clear correlation between wet and dry sampling
- No large, consistent differences between the two methods were demonstrated.
- LLNL will continue with dry sampling

The committee had a collective dialogue on this subject. This discussion will be deferred and sent to one of the subcommittees for a position paper on the topic.

3. 10:30 – 11:00 a.m. Beryllium in Non-Sparking Tools (Jim Jenkins, Y-12)

Jim Jenkins briefed the committee on the usage of non-sparking tools containing beryllium. These tools were swiped and found to have significant amounts of beryllium in the tools. Jim showed pictures of the tools and acquainted the committee with the manufacturers of the tooling of concern

4. 11:00 – 12:00 p.m. Subcommittee Meetings

The Subcommittees broke into groups

Technical Practices, Standards, and Measures:

Name	Organization	Phone Number	e-mail
Steve Abeln	LANL	505.667.3954	abeln@lanl.gov
Jim Johnson	LLNL	925.422.5165	johnson33@llnl.gov
Ken Groves	Sevorg	505.588.9064	sevorg@yahoo.com
David Weitzman	DOE/EH	301.903.5401	dave.weitzman@eh.doe.gov
John L. McKenney	SNL	505.844.6772	jmcken@sandia.gov
Ken Meyer	Pantex	806.477.2409	kmeyer@pantex.gov

Position Paper on Cleaning of beryllium components:

Steve Abeln committed to obtaining scanning electron microscope (SEM) images of beryllium components as a first order approach. Steve's presupposition is that one cannot truly clean beryllium components to a clean swipe unless the surface finish has a high polish. If the surface is abraided, it will more than likely yield beryllium particulate. Jim Johnson felt very strongly that there is no guidance regarding the swipe techniques and how to appropriately clean the parts to the level that is required.

The parts must be cleaned ultrasonically to remove the particulate. This is a must

We do not have a single method of beryllium swiping. It was discussed as to whether there was any value in standardizing this method. There is no clear consensus on the value of a standard method. It is not clear that we could clearly achieve this objective. One of the concerns about a standard is that it becomes the only way despite the existence of other validated methods.

Action Items:

- Initiate a survey of the facility specific cleaning methods and the WR cleaning methods to get a baseline for best practices - Jim Johnson
- Initiate a survey of the facility specific swipe methods (wet vs. dry, instructions for the technicians, a defined grid vs. a judgement estimate of the 100 sq. cm, etc.). – Jim Johnson
- Get back together on a conference call to discuss the various cleaning and swipe techniques to educate the SC members on common techniques and differences. – Jim Johnson
- Compile LANL cleaning techniques – Steve Abeln
- Initiate a beryllium surface study (lathe depth of cut variation, EDM, saw (diamond and band), polished surfaces, and documentation of the surface appearance via SEM imaging). – Steve Abeln
- We need to look into the possible development of a procedure for rough surfaces where we can verify that we have removed loose particulate from the surface and without agitating the surfaces by taking swipes.
- The committee deferred discussion on a position paper regarding non-sparking tools beryllium loose particle contamination and surface analysis of the Y-12 tools.

<u>CBD Prevention Committee</u>

George Fulton is preparing SC notes to submit into the BHSC Corporate minutes (Working on Skin Protection Position Paper).

<u>CBD Research Needs Committee</u>

Beryllium research notes

Barb Hargis will have someone do personal follow-ups to get researcher responses.

Send research log documents and distribution list to creek

Mark Sutton sends research form

Call Kreiss on Hoover participation

Creek/Hoover action items to follow-up on military members
Bob Carpenter at Wright Patterson Air force base as contact (ask Hoover & Dave Wehrly)

Research Committee meet on Thursday, June 27th (after Tinkle Meeting June 25-26). Sally Tinkle check on meeting room

Kolanz/McCawley talk to Hoover on Bibliography Action Items

Review action items

McCawley write white paper on air sampling methods. Paul write opposing view.

Review research list.

Speakers next meeting – Takaro, Bill Brady - Wambach

Ray Gilmet to speak on his chelation paper with Eisenbud - Scripsick

Questions to be answered
How do we make BLPT a reliable screening test OR is it time to cut bait on BLPT?
What is predictive value of a +BLPT?
Does treatment alter the prognosis of CBD?
Is intact skin a route of sensitization?
What is the disease pathway?
Is there a viable real-time air method to assessing risk?
Is there a cure?
What is the sensitization rate in the general population?

What are the barriers to answer these questions.

5. 1:00 – 2:30 p.m. Subcommittee Meetings

The Subcommittees reconvened to work on the action items assigned by the BHSC Chairman.

6. 2:30 – 3:30 p.m. Subcommittee Meetings

The Committee collectively reconvened to discuss the following Committee business:

<u>Next Meeting Date and Potential Site</u>

Lawrence Livermore National Laboratories
March 6-7, 2002

Bethesda, MD
June 27, 2001
Meeting will coincide with S. Tinkle's Beryllium Research Symposium: Basic Mechanisms and Human Health on June 24-25, 2002

Action Items (issues for next meeting):

- We need to pull in more operations contacts to the Committee, perhaps see if Steve Abeln can help to bolster this membership constituency (J. Johnson)
- Identify the operations contact to solicit their input to the committee. It is generally recognized that the beryllium issue is a substantial problem for the operations entities across the complex. The BHSC has specific answers to specific questions that the operations groups have. As a result, it is generally agreed that when shown that we can add value to their processes, the operations entities can and will aggressively give us the input that we need to continue to help them.

Beryllium Health and Safety Committee

Steve Abeln, Committee Chairman
Ablen@lanl.gov 505.667.3954

Meeting Attendance
October 17-18, 2001
Livermore, California (LLNL)

Attachment B, BHSC Attendance

Wednesday October 17, 2001

Name	Organization	Phone	email
Steve Abeln	LANL	505.667.3954	abeln@lanl.gov
Kathryn Creek	LANL	505.665.1929	creek@lanl.gov
Tony Quinn	AWE	(44)118.982.4377	tony.quinn@awe.co.uk
Jim Slawski	NNSA/NA-53	301.903.5464	james.slawski@ns.doe.gov
Diana Larson	Sandia/Ca	925.294.3178	dllarso@sandia.gov
Michael McCawley	NIOSH	304.285.6216	mam2@cdc.gov
Sally Tinkle	NIOSH	304.285.5841	sft3@cdc.gov
Ken Meyer	Pantex	806.477.4209	kmeyer@pantex.com
Steve Bustero	LLNL	925.424.4506	burastero1@llnl.gov
James S. Johnson	LLNL	925.422.5165	johnson33@llnl.gov
Ken Groves	Sevorg Services	505.588.9065	sevorgservices@yahoo.com
Nick Lweis	AWE	(44)118.982.7674	occhealth@awe.com.uv
Sally Tinkle	NIOSH	304.285.5841	sft3@cdc.gov
Marc Kolanz	Brush Wellman	216.383.6848	marc_kolanz@brushwellman.com
Tammy Taylor	LANL	505.667.5569	taylort@lanl.gov
Graham Duckworth	AWE	(44)118.982.4377	n/a
Stephanie Ball	SNL/CA	925.294.2112	sball@sandia.gov
David Zalk	LLNL	925.422.8905	zalk1@llnl.gov
David J. Weitzman	DOE/EH-52	301.903.5401	dave.weitzman@eh.doe.gov
Paul Wambach	DOE/EH-6	301.903.7373	paul.wambach@eh.doe.gov
Dave Wehrly	Y-12/Health Svcs.	865.574.1572	dtw@y12.doe.gov
Andre Dufrense	McGill Univ.	514.398.8419	andre.dufrense@mcgil.edu
Larry R. Jones	DOE-YAO	865.576.1853	joneslr@yao.doe.gov
Kurt Dreger	LLNL	925.424.3744	dreger2@llnl.gov
Ainsley Weston	NIOSH	304.285.6221	agw8@cdc.gov
Jim Boyer	LLNL	925.423.6551	boyer2@llnl.gov
Hai Teh	Micro Metallics	408.998.4930	tehh@micrometallicscorp.com
John L. McKenney	SNL/ABQ	505.844.6772	jmcken@sandia.gov
John Bullock	IPMI	203.784.3181	mail@johnbullock.com
Bruce King	LLNL	925.424.4046	king47@llnl
Dean Decker	DOE/OAK	510.637.1599	dean.decker@oak.doe.gov
James O. Jackson	LLNL/HCD	925.422.4256	jackson20@llnl.gov
Ronald C Scripsick	LANL/ESH-5	505.667.7392	scrip@lanl.gov
Mark Sutton	LLNL/CMC	925.424.2137	sutton18@llnl
Rohit Shah	LLNL/HCD	925.423.7348	rshah@llnl.gov

Beryllium Health and Safety Committee

Steve Abeln, Committee Chairman
Ablen@lanl.gov 505.667.3954

Meeting Attendance
October 17-18, 2001
Livermore, California (LLNL)

Attachment B, BHSC Attendance

Thursday, October 18, 2001

Name	Organization	Phone	email
Steve Abeln	LANL	505.667.3954	abeln@lanl.gov
Kathryn Creek	LANL	505.665.1929	creek@lanl.gov
Tony Quinn	AWE	(44)118.982.4377	tony.quinn@awe.co.uk
Jim Slawski	NNSA/NA-53	301.903.5464	james.slawski@ns.doe.gov
Diana Larson	Sandia/Ca	925.294.3178	dllarso@sandia.gov
Michael McCawley	NIOSH	304.285.6216	mam2@cdc.gov
Sally Tinkle	NIOSH	304.285.5841	sft3@cdc.gov
Ken Meyer	Pantex	806.477.4209	kmeyer@pantex.com
Steve Bustero	LLNL	925.424.4506	burastero1@llnl.gov
James S. Johnson	LLNL	925.422.5165	johnson33@llnl.gov
Ken Groves	Sevorg Services	505.588.9065	sevorgservices@yahoo.com
Nick Lweis	AWE	(44)118.982.7674	occhealth@awe.com.uv
Marc Kolanz	Brush Wellman	216.383.6848	marc_kolanz@brushwellman.com
Graham Duckworth	AWE	(44)118.982.4377	n/a
Stephanie Ball	SNL/CA	925.294.2112	sball@sandia.gov
David J. Weitzman	DOE/EH-52	301.903.5401	dave.weitzman@eh.doe.gov
Paul Wambach	DOE/EH-6	301.903.7373	paul.wambach@eh.doe.gov
Dave Wehrly	Y-12/Health Svcs.	865.574.1572	dtw@y12.doe.gov
Andre Dufrense	McGill Univ.	514.398.8419	andre.dufrense@mcgil.edu
Larry R. Jones	DOE-YAO	865.576.1853	joneslr@yao.doe.gov
Kurt Dreger	LLNL	925.424.3744	dreger2@llnl.gov
Ainsley Weston	NIOSH	304.285.6221	agw8@cdc.gov
Jim Boyer	LLNL	925.423.6551	boyer2@llnl.gov
John L. McKenney	SNL/ABQ	505.844.6772	jmcken@sandia.gov
Bruce King	LLNL	925.424.4046	king47@llnl
Dean Decker	DOE/OAK	510.637.1599	dean.decker@oak.doe.gov
Ronald C Scripsick	LANL/ESH-5	505.667.7392	scrip@lanl.gov
Mark Sutton	LLNL/CMC	925.424.2137	sutton18@llnl
Rohit Shah	LLNL/HCD	925.423.7348	rshah@llnl.gov
Carol Strasser	LLNL	925.424.4516	strasser2@llnl.gov

Beryllium Health and Safety Committee

Steve Abeln, Committee Chairman
Ablen@lanl.gov 505.667.3954

Agenda – Attachment A

8:30	Welcome	Abeln
8:45	Overview of last meeting minutes	McKenney
9:00	LLNL Medical Surveillance	Burastero
9:30	Beryllium Chemistry	Sutton
10:00	Colorimetric Sampling Method	Taylor
10:30	Break	
10:45	Genetic Studies	Weston
11:15	Paper Discussion Development of 8-hr Occ. Exp. Limit for Be	Wambach
11:45	Lunch	
1:15	Technical Discussion/Skin Exposure	Sally Tinkle
1:45	Technical Discussion/Air Sampling	McCawley
2:15	Technical Discussion/Surface Sampling	Creek
2:45	Break	
3:00	Paper Review	McCawley
3:30	Beryllium Registry AIHA Be Proficiency Testing	Weitzman
4:00	Beryllium Part Cleaning Processes and their Efficiency	Johnson
4:30	Subcommittee Meetings	
5:00	Adjourn	

Thursday, October 18, 2001

8:00	Agenda	Abeln	
8:15	Subcommittee Meetings		
11:30	Lunch		
1:00	Subcommittee Meetings		
3:30	Subcommittee Reports	Hoover Ellis Garcia	
4:30	Review of Committee Meeting Minutes Action Items		Abeln
5:00	Adjourn		